بسم الله الرحمن الرحيم

M.sc research

Plantation of moringa (Moringa olifera) Kitir (Acacia mellifera) trees and palatable range spp as means of fodder source for livestock and restoration of degraded rangelands

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Rangelands

- Rangeland is defined by Society for Rang Management (SRM,1974) as the land on which the native vegetation(climax or natural potential) is predominantly grasses , grass-like plants ,forbs or shrubs suitable for grazing or browsing use.

- Includes lands vegetated naturally or artificially to provide a forage cover that is managed like native vegetation.

Importance of Rangelands

- Rangelands have many functions, but environmentally the most important one is that it provides a vegetation cover and thus protection for the soil, which also ensures sustainable economic production of feed for animals, firewood and other indirect benefits.
- Rangelands play an important role in the global environmental issues of today and they equally as deserving of international attention as rain forests, they are a major sink of carbon, which can be increased by reversing degradation and improving the production capacity.

Research problem

- Degraded rangeland has lost its productive capacity, because the soil profile is damaged and there is no live vegetation or seed reserve available
- Inevitable erosion removes topsoil with organic matter and nutrients.
- preventing the establishment of seedlings of perennial plant species.
- Also, there is no seed and fertilizer available .
- furthermore, socio-economic constraints prevent rangeland restoration or improvement.

Objectives

- To improve soil fertility through legume forages plantation.
- To secure animals' fodder of good quality throughout the year.
- To improve animal production through provision of highly nutritious feeds.
- To compare two tree species (Moringa, Kitir) .

Methodology

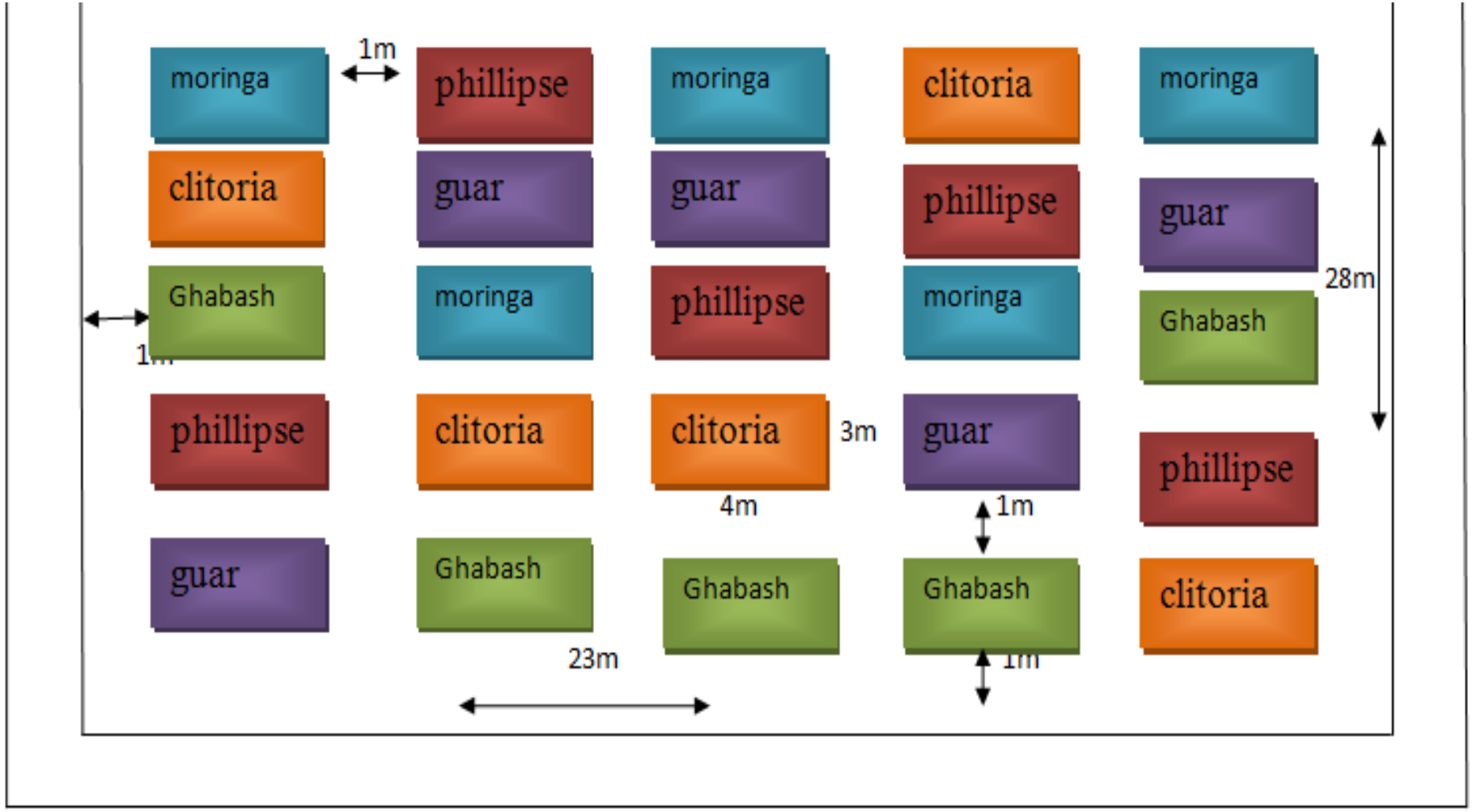
- Seedlings of *Moringa olifera and Acacia mellifera in* nursery were prepared.
- Seedlings of Shrubs were planted as life fence .
- The *range spp were* grown inside enclosure.
- Water harvesting technique was used to irrigate plants.
- Soil Nutrient content were Analyzed before and after planting date.
- Small experience will be done to feed the animals to know the effect of Moringa forage.

Implemented Activities

- the month of February has been providing seeds of (clitoria, phillipseara, guar) .
- germination testing of these crops during the period (18-26) was done in a lab of national Tree Seed Centre – Soba.
- Attendance workshop for capacity building in Obied City.
- conducted germination tests on seeds trees***(Moringa olifera)*** and***(Acacia mellifera)*** in the period (24 March - 16 April) and that in the germination room - National Tree Seed Centre

- 1000 Seedlings of trees***(Moringa olifera)*** and***(Acacia mellifera)*** were prepared in forest research nursery – Soba.
- questionnaire was conducted in local different villages in the Butana.

Experimental design



Experiment layout and Field work

three treatments were applied as means of range improvements of land degradation, the designated treatments conducted in the study are:

1- forage seeds and Moringa ***olifera*** seedlings with water harvesting techniques.

2-forage seeds and Acacia mellifera seedlings with water harvesting techniques.

3– Control

- The areas were identified in three places and were considered as trials site ***on area of 1932m^2*** Per site.
- *The trials were conducted* in five parallel strips of different forage crops was cultivated (phillipseara , clitoria ,guar,moringa) ,each strip was divided into five equal plots area of 12 meters (3 width and 4 Length) and these crops -were grown randomly assigned to the main plots
- Seedling of fodder shrubs were planted on the layout as life fence.

Processes that was completed in the field

- Site planning
- Establishment of water harvesting tarres
- Soil samples were taken for analysis purpose.
- Seedlings were completely planted.
- forage crops were cultivated.

Germination

Table(1) showing the dates of germination in Sobagh site

	Moringa oleifera	Aristida spp	Clitoria trenata (klitoria)	Phasulus trilobata (flipesara)	Cyamopsis tetragonolopa
Planting date	9/8/2013	9/8/2013	9/8/2013	9/8/2013	9/8/2013
Germination date	13/8/2013	13/8/2013	13/8/2013	13/8/2013	13/8/2013
Germination 50%	15/8/2013	15/8/13	16/8/2013	15/8/13	15/8/13
Flowering date	0	0	9/9/2013	0	0

Table(2) showing the dates of germination in Gad Alla site

	Moringa oleifera	Aristida spp	Clitoria trenata (klitoria)	Phasulus trilobata (flipesara)	Cyamopsis tetragonolopa
Planting date	17/8/2013	17/8/2013	17/8/2013	17/8/2013	17/8/2013
Germination date	23/8/2013	20/8/2013	20/8/2013	23/8/2013	20/8/2013
Germination 50%	25/8/2013	25/8/13	26/8/2013	26/8/13	25/8/13
Flowering date	0	0	0	0	0

Table(3) showing the dates of germination in Adid toal site

	Moringa oleifera	Aristida spp	Clitoria trenata (klitoria)	Phasulus trilobata (flipesara)	Cyamopsis tetragonolopa
Planting date	23/8/2013	23/8/2013	23/8/2013	23/8/2013	23/8/2013
Germination date	26/8/2013	27/8/2013	27/8/2013	27/8/2013	26/8/2013
Germination 50%	28/8/2013	28/8/13	28/8/2013	28/8/13	28/8/13
Flowering date	0	0	0	0	0

Parameters

Parameter measured for forage plant

1- plant height was measured .

2- Productivity per unit area was calculated.

Parameter of shrubs

1- Plant shoot height, diameter andnumber of brunch were measured every month.

Tools: Vernia, tape, quadrate, ruler and camera.

Problem faced

- Water shortage
- Insects like Serfa (Arabic name)